

AFFIDAVIT OF EDWARD O. PRICE, III

I. BACKGROUND AND PURPOSE

Q. WHAT IS YOUR NAME AND BUSINESS ADDRESS?

A. My name is Edward O. Price, III. My business address is the Department of Economics and Legal Studies in Business, Oklahoma State University, Stillwater, Oklahoma, 74078-0555.

Q. BY WHOM ARE YOU EMPLOYED AND WHAT IS YOUR POSITION WITH YOUR EMPLOYER?

A. I am employed at Oklahoma State University as an Associate Professor of Economics.

Q. WHAT IS YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND?

A. I have two degrees in economics from Texas A&M University. I completed my Bachelor of Arts degree, with a business minor, in 1974. I completed my Ph.D. in 1980 with areas of specialization in economic theory, the history of economic thought, industrial organization, public economics, and finance. I joined the economics faculty at Oklahoma State University in the fall of 1979 as an Assistant Professor of Economics. I have been employed at OSU for 17 years, having been promoted to the rank of Associate Professor in 1984.

Q. WHAT IS THE PURPOSE OF THIS TESTIMONY?

A. I have been asked to review the report prepared by the WEFA group which summarizes their analysis of the economic impact of Southwestern Bell's entry into the market for long distance telephone services in Oklahoma. I have also been asked to evaluate the conclusions reached in this study and to be prepared to present my opinions to regulatory commissions.

II. ASSESSMENT OF WEFA'S CONCLUSIONS

Q. WHAT ARE THE CONCLUSIONS OF THE WEFA STUDY?

A. The WEFA Group concludes that the economic impact of Southwestern Bell's entry into long distance telephone markets in Oklahoma will include 10,450 new jobs and an additional \$762 million in real Gross State Product (the inflation-adjusted, dollar-value of production in the state economy) by the year 2007. The study finds that the policy change increases the compound annual rate of growth in employment from 1.05 percent to 1.12 percent and increases the compound annual rate of growth in real Gross State Product from 1.87 percent to 1.96 percent.

The WEFA study also estimates the economic impact of the policy change by industry and by geographic area. Since the projected changes are initiated through the telecommunications industry, those industries and areas that are disproportionately dependent on telecommunications will receive disproportionate shares of the benefits. Thus, the manufacturing and service sectors of the Oklahoma economy will account for approximately 66 percent of the new jobs and approximately 62 percent of the increase in

real Gross State Product. Currently, these two sectors account for roughly 40 percent of state employment and 34 percent of real Gross State Product.

The geographic impact of the policy changes is similarly disproportionate. While the Oklahoma City and Tulsa Metropolitan Statistical Areas represent 63 percent of state employment, these two areas are forecast to gain approximately 83 percent of the new jobs. These two urban areas will also account for 87 percent of the growth in real Gross State Product even though their current share of real Gross State Product is 62 percent.

While the economic impact of Southwestern Bell's entry into long distance markets in Oklahoma are concentrated in the manufacturing and service sectors and in the Oklahoma City and Tulsa areas, the other sectors of the economy and areas of the state will benefit. The WEFA study projects some employment gain in every sector and every area of the state. Similarly, every sector and area can expect to see some gain in real Gross State Product.

Q. HOW DID THE WEFA GROUP ANALYZE THE ECONOMIC IMPACT OF SOUTHWESTERN BELL'S ENTRY INTO LONG DISTANCE MARKETS IN OKLAHOMA?

- A. The WEFA Group estimates the economic impact of Southwestern Bell's entry into long distance markets in Oklahoma by comparing two forecasts of the Oklahoma economy. The "baseline" projection estimates economic conditions in Oklahoma for the year 2007 based on current economic circumstances. The "long distance simulation" projection estimates the state of the Oklahoma economy in 2007 based on the expected economic effects of the requested change in the telecommunications market. The differences between these two projections are the economic impact of Southwestern Bell's entry into the market for long distance telephone services in Oklahoma.

The baseline and simulation forecasts are derived from a statistical model of the Oklahoma economy. This statistical model attempts to capture those characteristics that are unique to the Oklahoma economy. This is accomplished by incorporating the fundamental structure of Oklahoma industry, including the mix of industries that are specific to Oklahoma. The statistical model also incorporates the impact of changes in the national economy on the Oklahoma economy.

Q. IS THE METHOD USED BY THE WEFA GROUP APPROPRIATE?

- A. The WEFA Group's study is consistent with standard economic practice and methods with respect to macroeconomic forecasting. The method is similar to that employed in the Oklahoma State Econometric Model which is used in the preparation of the annual *Oklahoma Economic Outlook* published by the College of Business Administration at Oklahoma State University. From the description of their statistical methods, the methodology employed by WEFA is as sophisticated as I have encountered.

My only concern with the model is that it probably does not capture all of the economic consequences of recent changes in the Oklahoma economy. Oklahoma has experienced some important changes in its telecommunications industry and industries that are strongly tied to telecommunications. Examples include the 1995 acquisition of WilTel by WorldCom/LDDS, the 1996 announcement by Southwest Airlines of plans to locate a reservations center in Oklahoma, The Sabre Group's contracts to provide information technology services to U. S. Airways, Dollar Rent A Car, and Thrifty Car Rental in 1997.

and the Williams Companies' expansion into the wholesale long distance market in 1998. These are but the latest developments in Oklahoma's efforts to diversify its economy. While many of these developments have not had time to impact the statistical record, it is my opinion that the Oklahoma economy will be even more responsive to the economic effects of Southwestern Bell's participation in the long distance telephone services market than predicted by the WEFA Group's study.

Q. WHAT ARE THESE ECONOMIC EFFECTS OF INCREASED COMPETITION USED IN THE WEFA STUDY?

- A. The economic gain to Oklahoma predicted by the WEFA Group's study are generated by three economic effects of increased long distance competition. The first consequence of competition is a decrease in prices in the long distance services market and in the telecommunications industry as a whole. These lower prices will stimulate economic activity in the telecommunications industry and in industries that depend heavily on telecommunications services. The increased economic activity in these sectors will stimulate business in the other sectors of the Oklahoma economy.

The second economic effect of allowing Southwestern Bell to compete for long distance services will be enhancements in the quality of telecommunications services. These quality enhancements will increase productivity in the telecommunications industry and telecommunications-dependent industries, which, in turn, stimulates economic activity in these two sectors of the Oklahoma economy. This increased activity will spillover into the rest of the state economy and stimulate additional economic activity.

The third economic effect of Southwestern Bell's entry is an indirect effect of the other two effects. Lower telecommunications prices and new and higher quality telecommunications services will have the side-effect of increasing the labor-force participation rate. Lower prices and improved telecommunications services will make telework and telecommuting a more viable alternative to the traditional workplace environment. These new employment opportunities will induce entry into the workforce by some who otherwise would not have participated in the labor force. This increased utilization of the population of Oklahoma will have yet another stimulative effect on the Oklahoma economy.

While each of these effects will have a positive impact on the Oklahoma economy, the magnitude of this impact depends on the magnitudes of the aforementioned economic effects of Southwestern Bell's entry into long distance services in Oklahoma. The simulation forecast from which the WEFA Group estimates the economic impact of the requested policy change assumes that (1) the average price of long distance services will fall by twenty-five percent over five years, (2) productivity increases will increase by two percent per year over five years, and (3) the labor-force participation rate will increase by one-half of one percent over the next ten years.

Q. ARE THESE ASSUMPTIONS ABOUT THE MAGNITUDES OF THE ECONOMIC EFFECTS APPROPRIATE?

- A. In my opinion, the assumptions used in WEFA's simulation forecast to quantify the magnitude of the economic effects of the requested policy change are reasonably conservative. When one considers the impact that technological change has had on prices of other goods and services and the results of introducing competition into other regulated markets, the WEFA Group's use of a 25 percent decrease in average long distance

services prices over 5 years would seem to be the minimum change that we can expect. Similarly, the assumption regarding productivity gains would appear to understate what we can expect. New and higher quality telecommunications products will create new business opportunities and new ways of doing business in industries in which Oklahoma has had some recent and significant economic development successes. The study's assumed one-half of one percent increase in the labor-force participation rate over the next ten years may well be the estimate that is understated to the greatest extent in the WEFA study. This is due to factors that are unique to Oklahoma and to the recent passage of welfare reform legislation.

Oklahoma state government has a significant investment in its own telecommunications infrastructure called OneNet — the Oklahoma Network for Educational Enrichment. This network was built to provide the latest telecommunications technology to approximately two-thirds of the state's residents with plans to provide a wide range of services, the most important of which was enhanced distance education. Various state agencies, including the Oklahoma Regents for Higher Education, are exploring ways to exploit this technology. One, yet unexplored opportunity, is in the ongoing efforts to reform the welfare system.

The Welfare Reform Act of 1996 transfers the funding and responsibility for operating the welfare system to the states and sets time limits on an individual's welfare benefits. One of the economic rationales behind this policy change is to provide welfare recipients with greater incentives to enter the labor force. One often expressed concern with welfare reform is whether or not welfare recipients will be able to find employment. It is widely recognized that training for welfare recipients will be an integral part of the welfare reform process. The State of Oklahoma is in the unique position of have the infrastructure in place to provide training via OneNet. Combining teletraining with the telework opportunities that will develop as a result of unrestricted competition in long distance services in Oklahoma may well result in an even larger increase in the labor-force participation rate than posited in the WEFA study.

Q. WHAT IS YOUR OPINION REGARDING THE ECONOMIC IMPACT OF
SOUTHWESTERN BELL'S ENTRY INTO LONG DISTANCE MARKETS IN
OKLAHOMA?

- A. In my opinion, the economic impact of immediate and unrestricted competition in long distance services in Oklahoma will be even larger than that forecast in the WEFA study. The WEFA study seems to be a conservative estimate of the economic impact of the requested policy change. Southwestern Bell's entry, if granted, will stimulate economic activity in the State of Oklahoma and result in increases in employment and real gross state product in excess of those estimated by WEFA.

III. SUMMARY

Q. CAN YOU SUMMARIZE YOUR CONCLUSIONS ABOUT THE WEFA STUDY?

- A. The WEFA Group's analysis of the economic impact of Southwestern Bell's entry into long distance markets in Oklahoma employs accepted economic practices to quantify the effects of the requested policy change. The study posits decreases in the prices of telecommunication services, increases in telecommunications productivity, and an increase in the labor-force participation rate. These changes combine to stimulate the

Oklahoma economy. The estimated impact is an increase of 10,450 new jobs and a \$762 million increase in real gross state product by the year 2007.

Given the conservative nature of the assumptions used in the forecasting model, I would expect an even larger impact on the Oklahoma economy. Consequently, I believe the requested change will serve the public interest.

Q. DOES THIS CONCLUDE YOUR AFFIDAVIT?

A. Yes.

Edward O. Price, III

Subscribed and sworn to before me this _____ day of February 1997.

Notary Public

My commission expires: _____

AFFIDAVIT OF MICHAEL RAIMONDI

I. INTRODUCTION

Q. WHAT IS YOUR NAME AND POSITION?

A. My name is Michael Raimondi. I am Executive Vice President of The WEFA Group (WEFA), an economic consulting and forecasting organization that was formed in 1987 through the merger of Wharton Econometrics Forecasting Associates and Chase Econometrics. WEFA is headquartered at 800 Baldwin Tower in Eddystone, Pennsylvania. My office is located at 25 Burlington Mall Road, Burlington, Massachusetts, 01803.

Q. WHAT IS YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND?

A. I attended Georgetown University and received a Bachelor of Science degree in international economic affairs in 1973. I also received a Master of Arts degree in economics from Georgetown University Graduate School in 1978. I have worked full time in the areas of economic analysis, modeling, and forecasting since 1977. Initially, I worked at Data Resources, Inc., currently a division of McGraw-Hill. I have worked with WEFA since 1989.

Q. FOR WHOM DOES WEFA PROVIDE ECONOMIC DATA, ANALYSES, AND FORECASTS?

A. WEFA currently provides economic data, analyses, and forecasts to over 1,000 client organizations throughout the United States and around the world. WEFA's clients include many large banks, manufacturers, utilities, and state governments in the United States.

Q. HAS WEFA CONDUCTED STUDIES ON TELECOMMUNICATIONS ISSUES?

A. Yes, we have conducted numerous studies on telecommunications and information technology issues for local exchange carriers, inter-exchange carriers, and other organizations interested in the future of telecommunications in the United States.

Q. WHAT IS THE PURPOSE OF THIS AFFIDAVIT?

A. The purpose of this affidavit is to summarize and discuss the attached report on the economic impact of permitting Southwestern Bell Communications Services, Inc. d/b/a Southwestern Bell Long Distance ("SBLD") to enter the interLATA long distance markets in Oklahoma. The report included as Exhibit 1 provides a description of the analysis and the results for Oklahoma in total and for each metropolitan area and the remaining non-metropolitan area.

II. ANALYTICAL APPROACH

Q. HOW DID YOU ANALYZE THE ECONOMIC IMPACT OF SBLD'S ENTRY INTO THE INTERLATA MARKETS IN OKLAHOMA?

A. This economic impact was analyzed in the context of WEFA's large-scale econometric models. These models enable WEFA to quantify the relationships between and among various sectors, regions, and states in the country. They are linked through sets of identical assumptions and feedback loops to assure consistency across industries, regions, and economic aggregates.

To utilize the power of WEFA's integrated network of models and forecasts, the analysis focuses on relevant issues and incorporates realistic assumptions about the state of the telecommunications services and information services industries.

WEFA's econometric models provide the framework with which to develop a comprehensive and consistent view of the economic impact resulting from changes in economic conditions, government policies, industry structure, and key product prices. In this case, research and analysis undertaken up to this point provide a set of assumptions or adjustments that can be imposed on WEFA's system of models, specifically to quantify the economic impact of increased long distance competition with SBLD's entry into the interLATA markets throughout Oklahoma.

Q. HAVE YOU USED THIS APPROACH IN OTHER STUDIES?

A. Yes, this approach has been used many times over the last decade to provide detailed data for many clients. Most of the analyses have been undertaken for our clients' internal use and are, therefore, proprietary. Others were undertaken for public policy purposes. The analysis presented in this affidavit and the attached report builds on several earlier studies that WEFA completed during 1992, 1993, and 1995: The Economic Impact of BOC Participation in the Information Services Industry, The Economic Impact of BOC Participation in the Telecommunications Equipment Manufacturing Industry, The Economic Impact of Eliminating the Line-of-Business Restrictions on the Bell Operating Companies, and The Economic Impact of Deregulating U.S. Communications Industries. All four of these studies are in the public domain.

Q. WHAT ASSUMPTIONS ARE USED IN THIS ANALYSIS TO SIMULATE THE IMPACT OF LONG DISTANCE COMPETITION IN THE ECONOMY?

A. I used WEFA's models to generate an alternative economic forecast called the Long Distance simulation. The following assumptions were used to alter the Baseline forecast:

- First, based on higher levels of competition in the interLATA long distance markets and on the resulting increased utilization of an efficient, intelligent network, long distance services prices are assumed to fall 25% below the Baseline forecast by 2002 or an additional 5% per year for the next five years.
- Second, more competition and lower long distance prices generate enhancements in the public network, information services, and hardware and software technologies. As a result, productivity gains and quality improvements in the use of information services average 2% more per year in the Long Distance simulation than in the Baseline forecast from 1997 through 2002.
- Third, with lower long distance prices and improvements in the use of information services, the labor force participation rate increases 0.5% in total over the next ten years as employers and employees take advantage of lower costs and higher productivity that enhance the viability of telework, telecommuting, and remote data, document, and information processing.

As noted in the report, all three assumptions incorporated into this analysis are believed to be conservative. First, regarding the long distance price reduction, in the examples where another major competitor entered a specific interLATA market in the past,

significant price reductions of 20% to 40% were offered immediately rather than stretched out over a five year period as assumed in this analysis. Second, the rapid increase in the use of information technology throughout the economy may lead to larger increases in information services productivity than incorporated in this analysis. And third, rapid advances in the use of information technology could easily shift the employment paradigm more than anticipated, making lower-priced long distance service even more valuable to businesses and households and expanding the labor force participation rate more than the amount assumed in this analysis.

III. ANALYTICAL RESULTS

Q. WHAT ARE THE RESULTS OF THE ANALYSIS?

A. In the Long Distance simulation, the Oklahoma economy grows faster than in the Baseline forecast. Due to the accelerated growth, the economy gains an additional \$762 million in real Gross State Product and, in the process, creates 10,449 additional jobs by 2007. Thus, SBLD's entry into the long distance markets clearly benefits the State, generating faster growth and creating new jobs.

It is important to note that the new jobs and economic activity are spread across all major industry groups as the benefits of lower prices and enhanced information technology productivity boost economic activity throughout the economy. The broad services sector, which includes several industries that are very intensive users of telecommunications services and information technology, gains over 4,800 jobs, while the manufacturing sector gains over 2,000 new jobs, and the wholesale and retail trade sector gains over 1,200 new jobs. As is the case with employment, the gains in Gross State Product are spread throughout the major sectors of the Oklahoma economy, and

the gains by sector closely mirror the gains in employment. Exhibit 1 provides a more detailed description of the analysis and the results for Oklahoma in total and for each metropolitan area and the remaining non-metropolitan area in Oklahoma. The report shows that all geographic areas in Oklahoma benefit from enhanced long distance competition.

Q. IS THIS THE BEST RESULT THAT OKLAHOMA CAN EXPECT FROM INCREASED COMPETITION IN THE INTERLATA LONG DISTANCE SERVICES MARKETS THROUGHOUT THE STATE?

A. No. As noted above, the assumptions that are used in this analysis are believed to be conservative. If prices decline more or faster than assumed, if productivity in the use of information services increases more or faster than assumed, and if labor force participation increases more or faster than assumed, then the benefits to Oklahoma in terms of jobs and economic activity would be greater than noted here and presented in the attached report. Furthermore, if the distribution of employment across industries and counties within the state is affected by lower prices and better applications more than expected, the gains in the smaller metropolitan areas and the rural areas could be much greater than noted here and presented in the attached report. Thus, the overall benefit to Oklahoma could be much greater than an additional 10,449 jobs and \$762 million in real Gross State Product in 2007 as a result of SBLD's entry.

Q. DOES THIS CONCLUDE YOUR STATEMENT?

A. Yes.

Signature: _____

Name: Michael J. Raimondi

Date: January XX, 1998

Sworn to and subscribed before me on this XXth day of January 1998.

Notary Public: _____

**The Economic Impact of
Southwestern Bell's Entry into the
InterLATA Long Distance Markets
in Oklahoma**

**Prepared by
The WEFA Group**

January 1998

EXECUTIVE SUMMARY

In February 1996, the Telecommunications Act of 1996 became law, holding the promise of sweeping changes in the way communications industries in this country are regulated. These changes include, first and foremost, the elimination of legal and regulatory barriers to market entry that prevent local telephone companies, long distance carriers, cable TV operators, and other communications and information services providers from competing in each other's markets. The promise of more rapid product, service, and market development awaits the increase in competition that is expected as the barriers are dismantled. Yet, many issues must be resolved and conditions must be satisfied before users reap the full benefits of competition. One area in which delays are built into the process is in the long distance services market. In particular, the Bell operating companies may not provide interLATA service until they either have a State commission approved agreement with one or more facilities based competitors or they have a State commission approved statement of terms and conditions under which the company offers to provide access to its competitors. Once the agreements are in place, the Bell operating companies can apply to the Federal Communications Commission for authorization to provide interLATA services.

The purpose of this study is to evaluate the potential economic impact of permitting Southwestern Bell Communications Services, Inc. d/b/a Southwestern Bell Long Distance ("SBLD") to enter the interLATA long distance markets throughout Oklahoma. In this study, two economic forecasts for Oklahoma by industry and by geographic area are used to quantify this economic impact.

The first forecast presented in this report is the Baseline long-term economic forecast for the Oklahoma economy. In the Baseline forecast, total real Gross State Product (GSP) increases \$13.9 billion in constant 1992 (or real) dollars by the year 2007 compared to 1997. The second forecast is an alternative (or the Long Distance simulation) developed using WEFA's large-scale econometric models to quantify the impact of SBLD's entry into the interLATA long distance markets throughout Oklahoma. In the Long Distance simulation, the Oklahoma economy grows slightly faster than in the Baseline forecast. As a result, real Gross State Product is \$762 million higher and total employment is 10,449 jobs greater in 2007 than in the Baseline forecast for that year. Thus, SBLD's entry benefits the Oklahoma economy, generating faster growth and creating new jobs. The key results are summarized below and explained in more detail throughout the report.

Employment

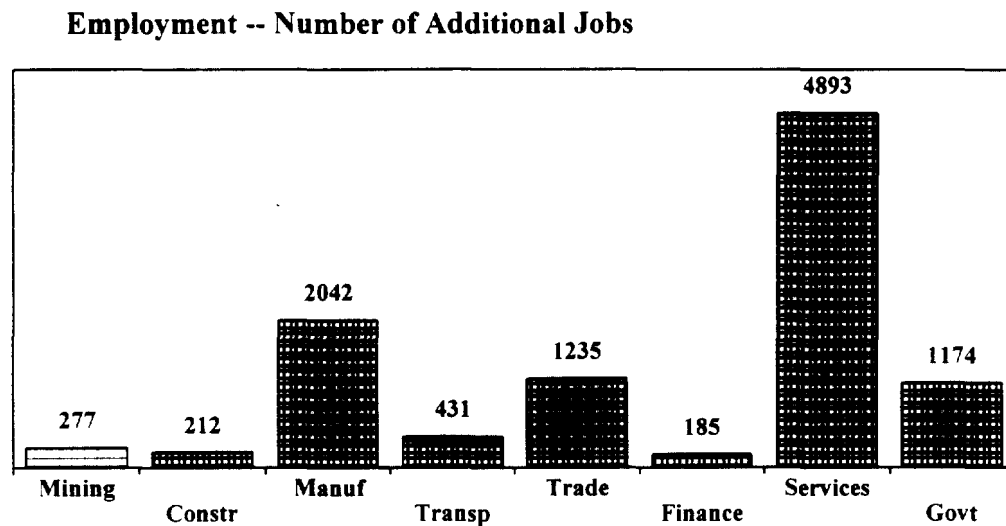
- Total employment increases, adding 4,882 new jobs in 2002 and 10,449 new jobs in 2007. Employment increases to 1.551 million by 2007 in the Long Distance simulation but to only 1.541 million in the Baseline forecast.
- The new jobs are spread across all major industry groups as the benefits of lower prices and the resulting enhanced applications boost economic activity throughout the economy. Figure 1 illustrates the employment gains for the major industries in Oklahoma. The broad services sector, which includes several industries that are very intensive users of telecommunications services and information technology, gains over 4,800 jobs, while the manufacturing sector

gains over 2,000 much needed new jobs, and the wholesale and retail trade sector gains over 1,200 new jobs.

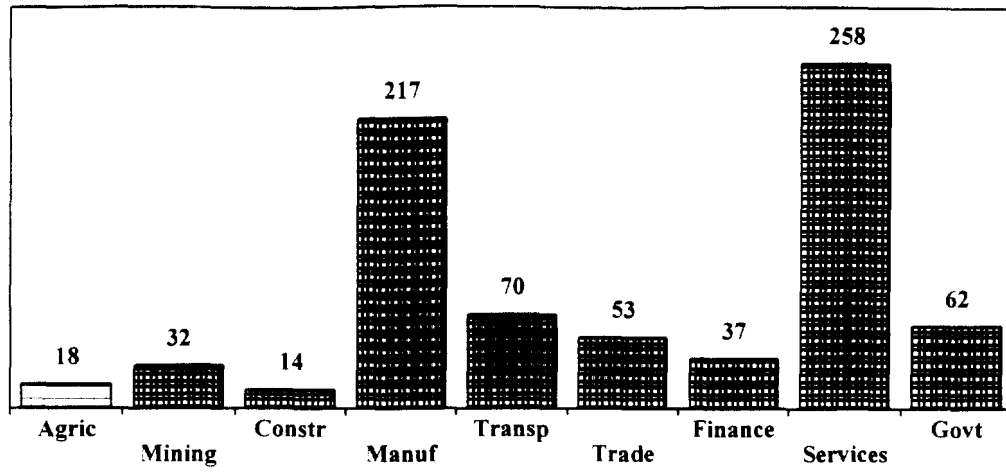
Gross State Product

- Real GSP is \$762 million higher than in the Baseline forecast in 2007 as businesses use lower priced services and the resulting new applications to gain efficiencies in their activities and in labor force utilization.
- As is the case with employment, the gains in GSP are spread throughout the major sectors of the Oklahoma economy, and the gains by sector closely mirror the gains in employment. Figure 1 also illustrates GSP gains in 2007 for the major sectors.

Figure 1
Economic Gains by Major Industry Group in 2007



Gross State Product -- Millions of Additional 1992 Dollars



APPROACH AND METHODS

The total economic impact of SBLD's entry into interLATA long distance competition in Oklahoma is analyzed in the context of WEFA's U.S. economic, industry, and regional economic forecasts. The models that generate these forecasts enable WEFA to quantify the relationships between and among various sectors and regions of the country. They are linked through sets of identical assumptions and feedback loops to assure consistency across industries, regions, and economic aggregates.

The analysis presented in this report builds on several earlier studies that WEFA completed during 1992, 1993, and 1995: The Economic Impact of BOC Participation in the Information Services Industry, The Economic Impact of BOC Participation in the Telecommunications Equipment Manufacturing Industry, The Economic Impact of Eliminating the Line-of-Business Restrictions on the Bell Operating Companies, and The Economic Impact of Deregulating U.S. Communications Industries.

WEFA's existing models provide the framework with which to develop a comprehensive and consistent view of the economic impact resulting from changes in economic conditions, government policies, industry structure, and key product prices. In this case, research and analysis undertaken up to this point provide the assumptions and adjustments that can be imposed on WEFA's system of models. The research and analysis help quantify certain assumptions that are factored into the models for the Long Distance simulation:

- Long distance prices are changed to reflect the increased competition for customers and increased utilization of the public telecommunications network.
- Productivity in the use of information services is adjusted to account for quality improvements in information technology applications that result from lower long distance prices.
- With lower prices and enhanced information services, labor force participation is changed to reflect the increased viability of placing employees at remote locations -- either in their homes or in satellite offices.

The economic model simulation process initially utilizes the interaction between the U.S. economic and industry models. The price and productivity assumptions are incorporated directly into the industry model to create inputs for the U.S. economic model. The labor force participation assumption is added to the industry model inputs to drive the U.S. economic model simulations that provide the overall economic impact of the change. This process works as follows:

- Changes in prices, productivity, and quality are entered into the industry model. This model uses an imbedded input/output methodology to determine simultaneously consistent input and output industry prices. Since telecommunications and information technology products and services are used by all U.S. industries, changes in the prices and quality will affect input costs and eventually output prices of all the end-use industries. The model generates an alternative set of final demand price deflators for input to the U.S. economic model.

- This set of final demand deflators maps directly into the U.S. economic model through the price block. This yields a new U.S. economic forecast. This simulation adjusts total economic activity through the effects of prices on inflation, interest rates, wages, employment, income, and final demand. The labor force participation assumption is added to this solution to quantify the complete economic impact.
- When the industry and U.S. economic models are in agreement, the simulation results are factored into WEFA's regional forecasts. The state forecasts are adjusted to provide detailed state by state economic impacts on each industry. This adjustment assigns a greater share of the total economic impact to the larger or faster growing states and a smaller share of the total economic impact to the smaller or slower growing states.

The interrelationships between the models are explained briefly below.

U.S. Macroeconomic Analysis

WEFA's U.S. economic model is a quarterly econometric model of the U.S. economy. It is designed for forecasting, policy analysis, and simulation studies. This model is used each month by WEFA's economists to generate the baseline forecast of the U.S. economy as well as to provide alternative forecasts based on varying assumptions on government policies and other exogenous factors. The model is also used in a variety of consulting projects by the WEFA staff. A large number of clients use WEFA's U.S. economic model in their own planning and forecasting activities.

WEFA's U.S. economic model conforms to neo-Keynesian tradition, with important supply-side and financial influences incorporated into the system to yield a responsive simulation tool. Various income streams drive the components of final demand. The level and mix of output depend on movements in the components of demand. Employment, a major determinant of income, responds to changes in output. Monetary and fiscal conditions and a system of wages, prices, and supply factors interact with these major flows of economic behavior.

The components of demand are modeled from the bottom up using standard approaches which employ various measures of permanent income/output and relative prices. Relative price variables for investment goods incorporate detailed cost of capital specifications, which include a variety of tax policy levers. In addition to detailed consumption, fixed investment, and inventory sectors, the U.S. economic model contains fully specified housing, auto, and energy sectors. The model also includes a detailed trade sector in which eight categories (six categories of goods and two categories of services) of both exports and imports are modeled individually. Each is related to appropriate income/demand variables as well as to relative prices. The demand and domestic price variables in the import equations are aligned with the corresponding final demand terms.

Each industry's input-output weights from WEFA's industry model are applied to the components of spending to construct measures of output produced by each of the one-digit SIC industry groups. These industry output variables determine labor and capital requirements by industry. The price sector employs a stage-of-processing approach, which starts with unit labor costs and other input prices to determine producer prices. Producer prices are major determinants of the various implicit

price deflators, which then finally determine the consumer price indices. The process is simultaneous since the deflators and a measure of labor market tightness are determinants of the wage index.

The U.S. economic model captures important linkages between the financial and real sectors of the economy. Outcomes in the economy affect the federal funds rate through a Federal Reserve reaction function formulation. Long-term interest rates are modeled as functions of short-term interest rates, inflation expectations, and the federal budget deficit. Besides their impact on the flows of interest payments and receipts, interest rates affect user cost of capital variables, relative prices of consumer durables, and the consumer sentiment index, all of which influence investment and consumption.

U.S. Industry Analysis

The industry model is a combination input-output/stochastic model of business activity in each of 117 industries in the U.S. economy. The industry definitions include 73 manufacturing industries and 44 non-manufacturing industries. For each industry, the model uses a variety of monthly and quarterly data reported by the Department of Commerce. The standard industry framework is expanded for this analysis to explicitly account for the information services industry as part of the business services sector.

For the manufacturing industries, the model forecasts demand, industrial production indices, shipments, value of production, inventories, prices, man hours, productivity, average hourly earnings, material costs, and operating margins. For the non-manufacturing sectors, the model provides value of output, prices, man hours, and productivity.

The input-output block at the core of the model serves two important purposes. First, it defines the linkages among all 117 industries in the model. That is, the input-output coefficients provide both supply-side view (production function) and a demand-side view (market distribution) of each industry. Second, it translates macroeconomic forecasts of final demand based on the National Income and Product Accounts from WEFA's U.S. economic model into demand for goods and services by industry. The input-output relationships contained in the model are also used to calculate composite input costs by industry that provide the cost basis for price forecasts by industry. All other concepts in the model are forecast using estimated statistical relationships and defined identities.

U.S. Regional Economic Analysis

WEFA's approach to state and metropolitan area models represents a significant departure from most previous, multi-regional modeling and forecasting efforts. Most other regional models are constructed as proportions of the United States. In the WEFA system, however, each area is modeled individually and then linked into a national system. Thus, the models do not forecast regional growth as simple proportions of U.S. totals, but focus on internal growth dynamics and differential business cycle response. This approach is referred to as "top-down bottom-up." It contrasts sharply with pure share (top-down) models, and models that are not linked to a national macroeconomic model (bottom-up). Thus, it contains the best of both approaches.

WEFA's objective is to project how regional activity varies, given an economic environment as laid out by WEFA's U.S. economic and industry models. To do this, the model must be able to explain two key phenomena:

- Why states react differently from one another over the business cycle.
- Why states grow or decline relative to each other over the longer run.

These issues are addressed using information about detailed industrial mix, inter-industry and inter-regional relationships, productivity and relative costs, and migration trends.

The three major components of WEFA's regional modeling approach are summarized below.

- The major linkages among the models occur in the economic base or export sectors. These are identified as primarily agriculture, mining, the federal government, and most manufacturing industries. In a few states, banking, insurance, or services sectors (i.e., hotels) also can be classified as export sectors. These industries typically serve national rather than local markets or are not dependent upon local market conditions. On the other hand, the income generated from these sectors provides a major stimulus to the local economy. The local growth and decline of these sectors have an impact on the economic health of the state and the region.
- The local economy is composed of construction, transportation, utilities and communications, finance, insurance, and real estate, wholesale and retail trade, services, and state and local government. Major driving forces in this part of the economy are local in nature. The income generated by the export sectors circulates and multiplies through the local economy and generates the greater part of regional employment. These interactions and simultaneities can only be captured in an independent model.
- In the demographic sector, net migration is driven by economic conditions. The principal assumption here is that people follow jobs and higher incomes. This does not mean that nonpecuniary determinants of migration do not exist. However, these are either fixed (climate and landscape), vary only slowly over time (urbanization), or are special in nature (the ability to sell homes and retire to Sunbelt areas). The important thing is to provide the correct direction of causality. Demographic factors are most important on the consumption side of the regional economy. They are significant factors in housing, retail sales, and automobile purchases, and these relationships are captured in the models. Population is also an important long-term determinant of the size of such sectors as state and local government.

In the analysis of increased competition in the interLATA long distance markets, these state-level structural characteristics are important since some industries are more intensive users of telecommunications services than others. In particular, for each industry, the states with the larger shares of total employment or faster growth relative to the national average receive a larger share of the total economic impact. And the states with the smaller shares of total employment or slower growth relative to the national average receive a smaller share of the total economic impact. There are two reasons for this. First, the existing competitors as well as new entrants will work more aggressively to gain or maintain market share in the more lucrative larger and faster growth

markets. Second, the users of telecommunications services and information technology are more likely to implement new technologies and new applications sooner in the faster growing states since the expected business climate appears more favorable than in the slower growing states.

MODELING ASSUMPTIONS

This section of the report describes the modeling assumptions used to simulate the effects of SBLD's entry into the interLATA long distance markets in Oklahoma. It also explains how the assumptions were derived. The modeling assumptions generally relate to changes in long distance services prices, information service and technology productivity, and labor force participation that are expected to result from SBLD's entry into the long distance markets.

The Importance of Information and Communications in the Baseline Forecast

The development, packaging, distribution, and use of information has become a large and growing component of the United States economy. The range of business activities that comprise this segment of the economy is expected to generate output valued at over \$1 trillion (real 1992 dollars) in 1997. This constitutes over 11% of total real output in the economy. In 1985, this share was only 9%. In 2007, the real value of the information industry is expected to expand to \$1.7 trillion and to account for 14% of total real output.

Increasingly, easy access to information in printed or electronic form is just not enough to generate value. More sophisticated and flexible packaging in an interactive cyberspace is necessary to create the value that a demassified economy and society will demand. In this context, the telecommunications component of information technology is the gateway to more information, greater flexibility, and enhanced value. These technologies also allow American businesses to work "smarter" and, thus, maintain or enhance their competitiveness. That is why business' demand for - and use of -- telecommunications and information technology products and services has been growing so rapidly.

Table 1 displays the relative importance of telecommunications services spending for major industry groups and for the total national economy for the five years from 1991 to 1996 and WEFA's Baseline expectations through 2001. During the forecast period, telecommunications services become more important to most production and service processes. The only sector that is expected to show almost flat usage as a percent of total real revenue is wholesale trade. The gains recorded during the last five years put the share of total real revenue for the total economy spent on telecommunications services at 0.68%. This is almost 26% higher than it was in 1991. WEFA expects this share to increase at least another 23% over the next five years as the electronic transmission of more information (including huge databases, sound, images, and full-motion video) through an enhanced network becomes a viable alternative to CD-ROM and other physical electronic media. Of course, much of the increased transmission will occur on the Internet, company-specific intranets, and other private networks. But this upward trend still reflects the efficiencies that telecommunications services available on the public switched network lend to most processes in lieu of other productive inputs.

The data in Table 1 indicate that the industries with high information and data content are among the most intensive users of telecommunications services. These industries typically have had both above average consumption of telecommunications services as a share of industry output and above average growth in their telecommunications intensity historically. Several services sectors will

experience continued above average growth in their telecommunications service intensity over the forecast interval.

Table 1
Real Telecommunications Services Purchases
as a Share of Real Industry Revenue for the United States
(Percent)

Description	1991	1996	2001	<u>Cumulative Percent Growth</u>	
				1991-1996	1996-2001
Total Economy	0.54	0.68	0.84	25.9	23.5
Agriculture	0.25	0.29	0.33	16.0	13.8
Mining/Construction	0.29	0.37	0.46	27.6	24.3
Manufacturing	0.29	0.36	0.44	24.1	22.2
Transportation	0.98	1.25	1.57	27.6	25.6
Utilities	0.64	0.76	0.79	18.8	4.0
Wholesale Trade	0.31	0.31	0.32	0.0	3.2
Retail Trade	0.35	0.43	0.52	22.9	20.9
Financial Services	1.81	2.45	3.62	35.4	47.8
Insurance/Real Estate	0.44	0.68	0.95	54.6	39.7
Business Services	1.47	1.93	2.61	31.3	35.2
Legal Services	1.56	2.35	2.87	50.6	22.1
Health Care Services	0.63	0.86	1.17	36.5	36.1
Other Services	0.92	0.96	1.01	4.4	5.2
Government	0.94	1.26	1.49	34.0	18.3

Long Distance Simulation Assumptions

In the Long Distance simulation, the following assumptions are used to alter the Baseline economic forecast and to quantify the economic impact of SBLD's entry into the interLATA long distance markets:

- Based on higher levels of competition in the long distance markets in Oklahoma and on increased utilization of an efficient, intelligent network, long distance prices fall 25% below the Baseline forecast during the first five years of the forecast interval or an additional 5% per year for the next five years.
- More competition and lower long distance prices yield enhancements in the public network, accelerate the trend toward the use of information services, and help users take advantage of continuing advances in hardware and software technologies. Thus, productivity gains and quality improvements in the use of information services average 2% more per year in the Long Distance simulation than in the Baseline forecast during the first five years of the forecast interval.